

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
23 December 2004 (23.12.2004)

PCT

(10) International Publication Number  
**WO 2004/112347 A1**

(51) International Patent Classification<sup>7</sup>: **H04L 29/06**

[SE/SE]; Terrängvägen 5, S-181 30 Lidingö (SE). **LARS-SON, Tony** [SE/SE]; Kungsholms Strand 139, 3tr, S-112 48 Stockholm (SE).

(21) International Application Number:  
PCT/SE2004/000945

(74) Agent: **AROS PATENT AB**; P.O. Box 1544, S-751 45 Uppsala (SE).

(22) International Filing Date: 15 June 2004 (15.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/479,156 18 June 2003 (18.06.2003) US  
60/551,039 9 March 2004 (09.03.2004) US

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(71) Applicant (for all designated States except US): **TELEFONAKTIEBOLAGET LM ERICSSON** (publ) [SE/SE]; S-164 83 Stockholm (SE).

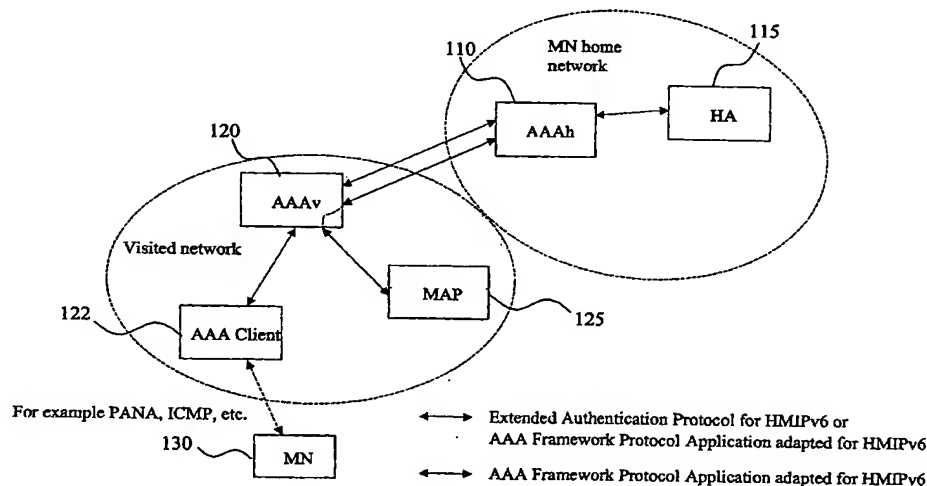
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **OYAMA, Johnson** [JP/JP]; 3-19-19-701 Higashisuna, Koto-ku, Tokyo 136-74 (JP). **KATO, Ryoji** [JP/JP]; 10-9, Wakamiya-dai, Yokusuka Kanagawa 239-0829 (JP). **RUNE, Johan**

[Continued on next page]

(54) Title: METHOD, SYSTEM AND APPARATUS TO SUPPORT HIERARCHICAL MOBILE IP SERVICES



(57) Abstract: A basic feature of the invention is to rely on an AAA infrastructure to "bootstrap" the HMIPv6 service for a mobile node (130) that "roams" in a visited network or the home network. In accordance with a preferred embodiment of the invention, bootstrapping the HMIPv6 service involves authenticating and authorizing the mobile node (130) for HMIPv6 service based on an AAA infrastructure. In an important scenario, the mobile node is roaming in a visited network, and the AAA infrastructure (110, 120, 122) links the visited network with the home network of the mobile node. The invention also supports the possibility of having the MAP (125) located in the home network or other network than the visited network. The reliance on the AAA infrastructure preferably involves transferring HMIPv6-related information required for authenticating and authorizing the mobile node for HMIPv6 service over the AAA infrastructure.



**Declaration under Rule 4.17:**

— of inventorship (Rule 4.17(iv)) for US only

**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
23 December 2004 (23.12.2004)

PCT

(10) International Publication Number  
**WO 2004/112347 A1**

(51) International Patent Classification<sup>7</sup>: **H04L 29/06**

(21) International Application Number:  
PCT/SE2004/000945

(22) International Filing Date: 15 June 2004 (15.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/479,156 18 June 2003 (18.06.2003) US  
60/551,039 9 March 2004 (09.03.2004) US

(71) Applicant (for all designated States except US): TELEFONAKTIEBOLAGET LM ERICSSON (publ) [SE/SE]; S-164 83 Stockholm (SE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): OYAMA, Johnson [JP/JP]; 3-19-19-701 Higashisuna, Koto-ku, Tokyo 136-74 (JP). KATO, Ryoji [JP/JP]; 10-9, Wakamiya-dai, Yokusuka Kanagawa 239-0829 (JP). RUNE, Johan

[SE/SE]; Terrängvägen 5, S-181 30 Lidingö (SE). LARSSON, Tony [SE/SE]; Kungsholms Strand 139, 3tr, S-112 48 Stockholm (SE).

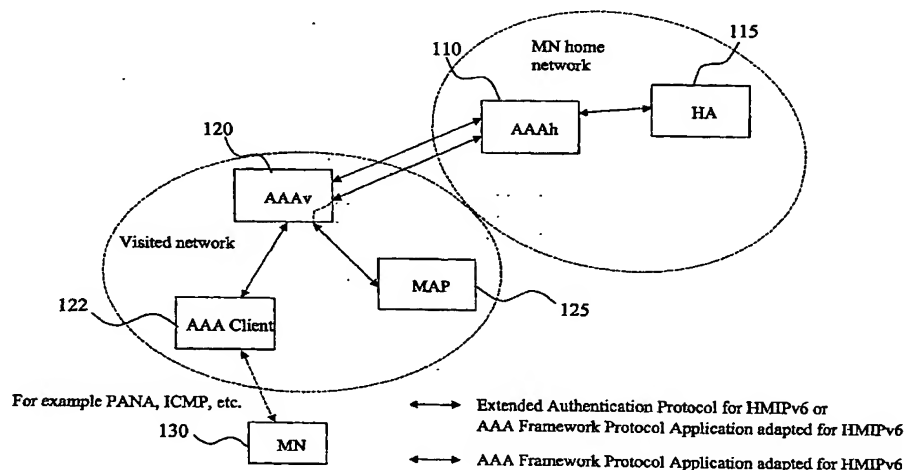
(74) Agent: AROS PATENT AB; P.O. Box 1544, S-751 45 Uppsala (SE).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: METHOD, SYSTEM AND APPARATUS TO SUPPORT HIERARCHICAL MOBILE IP SERVICES



(57) Abstract: A basic feature of the invention is to rely on an AAA infrastructure to "bootstrap" the HMIPv6 service for a mobile node (130) that "roams" in a visited network or the home network. In accordance with a preferred embodiment of the invention, bootstrapping the HMIPv6 service involves authenticating and authorizing the mobile node (130) for HMIPv6 service based on an AAA infrastructure. In an important scenario, the mobile node is roaming in a visited network, and the AAA infrastructure (110, 120, 122) links the visited network with the home network of the mobile node. The invention also supports the possibility of having the MAP (125) located in the home network or other network than the visited network. The reliance on the AAA infrastructure preferably involves transferring HMIPv6-related information required for authenticating and authorizing the mobile node for HMIPv6 service over the AAA infrastructure.



**Declaration under Rule 4.17:**

— *of inventorship (Rule 4.17(iv)) for US only*

**Published:**

- *with international search report*
- *with amended claims*

**Date of publication of the amended claims:** 16 June 2005

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*